| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/081,355 | 02/21/2002 | Krishnasamy Anandakumar | TI-29773 | 9762 |

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| EXAMINER |
|---|
| RIDER, JUSTIN W |

| ART UNIT | PAPER NUMBER |
|---|---|
| 2626 | |

| NOTIFICATION DATE | DELIVERY MODE |
|---|---|
| 09/05/2007 | ELECTRONIC |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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PTOL-90A (Rev. 04/07)

| | **Application No.** | **Applicant(s)** |
|---|---|---|
| **Office Action Summary** | 10/081,355 | ANANDAKUMAR ET AL. |
| | **Examiner** | **Art Unit** | |
| | Justin W. Rider | 2626 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on <u>25 March 2007</u>.

2a)☐ This action is **FINAL**.      2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) <u>1-8</u> is/are pending in the application.

  4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1-8</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on <u>21 February 2002</u> is/are: a)☒ accepted or b)☐ objected to by the Examiner.

  Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

  Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

  a)☐ All  b)☐ Some * c)☐ None of:

  1.☐ Certified copies of the priority documents have been received.

  2.☐ Certified copies of the priority documents have been received in Application No. _____.

  3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

  * See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO/SB/08)
  Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
  Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application

6)☐ Other: _____.

## DETAILED ACTION

1.      This action is responsive to communications: Appeal Brief filed 25 March 2007. Claims

1-8 are pending. The Remarks made in the Appeal Brief filed 25 March 2007 is now MOOT

based on new grounds of rejection. It is noted that this application has been reassigned to

another Examiner. The office apologizes to applicant for any inconvenience this has caused.

### *Claim Objections*

2.      Claims 7-8 are objected to because of the following informalities:

Claim 7, line 5 and Claim 8, line 2, 'operable to provide' should be stated more

appropriately, such as --performing--. Phrases including: 'is operable', 'can', 'might', 'are

configured', 'are assignable', and 'is connectable' among others, merely recite the ability of cases

to occur, but do not explicitly require them to do so. They fail to claim a positive recitation of the

interconnectivity of all elements of a system. The above are merely examples and do not

necessarily represent every instance of objectionable matter within the claims.

### *Claim Rejections - 35 USC § 102*

3.      The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the

basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4.     Claims 1 and 3 are rejected under 35 U.S.C. 102(e) as being anticipated by **Schuster et al. US Patent No. 6,175,871** referred to as **Schuster** hereinafter.

_Claim 1_: **Schuster** discloses a method for playout of packetized speech, comprising:

i. deferring truncation of an active frame (col. 15, line 58 - col. 16, line 15, _'The objective of the state diagram 350 is to maintain the buffer in its Normal state 354 ...As long as the the buffer depth stays between Low and High watermarks, the buffer state remains in the Normal state 354. ')_; and

ii. truncating [shortening] silence frames (col. 16, lines 8-10, _'The objective of the Drain state 356 is to shorten the silence periods and therefore reduce the buffer depth until it is returned to the Normal state 354. ')_.

_Claim 3_: **Schuster** discloses a method as per claim 1 above, further comprising expanding an active frame according to a voicing classification for said active frame (col. 15, lines 63-66, _'the buffer changes state from the Normal state 354 to the Fill state 352 as shown in transition 358. The objective of the Fill state is to bring the buffer depth back to the Normal state 354. ')_.

### _Claim Rejections - 35 USC § 103_

5.     The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6.      Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Schuster** in view

of **Murgia et al. (US Patent No. 6,369,722)** referred to as **Murgia** hereinafter.

_Claim 2_: **Schuster** discloses the method as per claim 1 above, wherein packetized speech

includes CELP-encoded frames (col. 8, lines 5-15).

However, while **Schuster** does disclose shortening, draining or truncating frames,

**Schuster** fails to, but **Murgia** does, specifically disclose wherein said truncating a silence frame

includes truncating an excitation for said silence frame (col. 16, lines 60-66, _'In the first mode,_

_the coder truncates to Q-p bits the index of the CELP excitation vector as explained above, and_

_the decoder reconstitutes an excitation on the basis of the truncated index. '_)

Therefore, it would have been obvious to one having ordinary skill in the art at the time

of invention to include the teachings of **Murgia** in the method of **Schuster** because it provides a

fine digital scaling adjustment, allowing an optimal trade between bit rate and transmission

quality (col. 2, lines 5-10).


7.      Claims 4-5 and 7-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over

**Schuster** in view of **Chen (US Patent No. 6,351,730)** referred to as **Chen** hereinafter.

_Claim 4_: **Schuster** discloses a method of frame playout expansion, comprising

classifying a frame as voiced or not (col. 8, lines 35-50).

However, while **Schuster** does disclose expanding or filling frames, **Schuster** fails to,

but **Chen** does, specifically disclose a packetized coding system wherein frames are filled using

pitch characteristics (col. 19, lines 6-8, _'treat it as the pitch period, and periodically repeat the_

_previous waveform at that pitch period to fill in the current frame of waveform. '_).

Therefore, it would have been obvious to one having ordinary skill in the art at the time

of invention to include the teachings of **Chen** in the method of **Schuster** because it provides an

adaptive codec that utilizes characteristics (e.g. pitch, pitch period, frame filling) that are

common knowledge to one skilled in the art of speech coding in order to provide reconstructed

speech while reducing coding complexity and delays (col. 3, lines 23-35).

*Claim 5*: **Schuster** discloses the method as per claim 4 above, wherein packetized speech

includes CELP-encoded frames (col. 8, lines 5-15).

However, while **Schuster**, in view of **Chen** discloses expanding or filling frames, both

**Schuster** and **Chen** fail to specifically point out the use of the excitation being the signal

expanded. The examiner is taking Official Notice that it would have been obvious to one having

ordinary skill in the art at the time of invention that the excitation signal would be altered, filled

or expanded to complete a speech signal to be constructed. It is common knowledge in CELP

coding that the excitation signal is the final signal reproduced before synthesis and so therefore

excitation expansion would be the obvious choice as it is the main signal to be synthesized. .

*Claim 7*: **Schuster** discloses a receiver, comprising:

i. an input for receiving CELP-encoded frames (FIG. 2, **96 & 97**, 'Data Packets');

ii. a decoder coupled to said input (FIG. 2, **162**, 'G.723.1');

iii. a playout scheduler coupled to input (FIG. 2, **164**, col. 7, lines 37-41, *'The D/A*

*converter 164 provides signal 165 to the second calling device 166 for playout.'*); and

iv. said decoder operable to provide expansion of a voiced frame in response to said

playout scheduler (col. 15, lines 63-66, *'the buffer changes state from the Normal state 354 to*

*the Fill state 352 as shown in transition 358. The objective of the Fill state is to bring the buffer*

*depth back to the Normal state 354. ').*

However, while **Schuster** does disclose expanding or filling frames, **Schuster** fails to,

but **Chen** does, specifically disclose a packetized coding system wherein frames are filled using

pitch characteristics (col. 19, lines 6-8, *'treat it as the pitch period, and periodically repeat the*

*previous waveform at that pitch period to fill in the current frame of waveform. ').*

Therefore, it would have been obvious to one having ordinary skill in the art at the time

of invention to include the teachings of **Chen** in the method of **Schuster** because it provides an

adaptive codec that utilizes characteristics (e.g. pitch, pitch period, frame filling) that are

common knowledge to one skilled in the art of speech coding in order to provide reconstructed

speech while reducing coding complexity and delays (col. 3, lines 23-35).

*Claim 8*: **Schuster** discloses a receiver as per claim 7 above, wherein said decoder

provides truncation of a frame in response to said playout scheduler only when said frame is a

silence frame (col. 16, lines 8-10, *'The objective of the Drain state 356 is to shorten the silence*

*periods and therefore reduce the buffer depth until it is returned to the Normal state 354. ')*

8.      Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Schuster**, in view

of **Chen** as applied to claim 4 above, and further in view of **Ananthapadmanabhan et al. (US**

**Patent No. 6,393,394)** referred to as **Ananthapadmanabhan** hereinafter.

*Claim 6*: **Schuster**, in view of **Chen** discloses the method as per claim 4 above,

describing the detection of different frame classifications (e.g. voiced or non-voiced [silence])

however failing to but **Ananthapadmanabhan** does, in teaching a speech coding method,

specifically disclose performing certain coding techniques based on frame classification type

(col. 11, lines 30-38, *'This decision is advantageously based upon the speech content of the frame. For example, LSI parameters for* <u>*stationary voiced frames*</u> *are quantized to best advantage with an MA prediction-based VQ method, while LSI parameters for* <u>*unvoiced frames and transition frames*</u> *are quantized to best advantage, '*).

Further, while **Ananthapadmanabhan** fails to specifically disclose performing expansion of an unvoiced frame based on a fixed codebook vector, **Ananthapadmanabhan** does disclose performing a different coding technique on a frame based solely on the classification of said frame. It would have been obvious to one having ordinary skill in the art at the time of invention that if different coding techniques are performed on a frame based on the signal (e.g. voiced, unvoiced, transitional), than it would be well known to perform expansion based on this fact as well. Also, altering a frame based on a fixed codebook vector is well known in the art to provide more accurate reconstruction of an input speech signal.

Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention to include the teachings of **Ananthapadmanabhan** in the method of **Schuster**, in view of **Chen** because **Ananthapadmanabhan** recites a speech codec that uses multiple methods to adapt to changes between periodic and nonperiodic frames to provide an advantageous codec that can accurately reconstruct input speech using adaptive linear predictive filtering (col. 4, lines 40-60).

### Conclusion

9.      The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. **Jacobs et al. (US Patent No. 5,414,796)** discloses a packet based vocoding system

that utilizes excitation manipulation; **Gersho et al. (US Patent No. 6,311,154)** discloses an

adaptive analysis-by-synthesis speech coding system; and **Ahmed** discloses a packetized coding

system that utilizes truncated frames.

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Justin W. Rider whose telephone number is (571) 270-1068. The

examiner can normally be reached on Monday - Friday 7:30AM - 5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, David R. Hudspeth can be reached on (571) 272-7843. The fax phone number for

the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent

Application Information Retrieval (PAIR) system. Status information for published applications

may be obtained from either Private PAIR or Public PAIR. Status information for unpublished

applications is available through Private PAIR only. For more information about the PAIR

system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR

system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would

like assistance from a USPTO Customer Service Representative or access to the automated

information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

J.W.R.
23 August 2007

**DAVID HUDSPETH**
**SUPERVISORY PATENT EXAMINER**
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